

REMARKS

Applicants respectfully request reconsideration and allowance in view of the foregoing amendments and following remarks. In the Office Action, mailed Nov. 30, 2006, the Examiner rejected claims 2-5, 7-10, 12-15, 17-20, 22-25, 27-31 and 33-35. By this response, claims 7-8, 17-18 and 27-28 have been amended, and claims 31 and 33-35 have been cancelled without prejudice. Following entry of this response, claims 2-5, 7-10, 12-15, 17-20, 22-25 and 27-30 will be pending in the application.

Claim Rejections – 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 2-5, 7-10, 12-15, 17-20, 22-25, 27-31 and 33-35 under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,487,249 to Kim, et al. (hereinafter “Kim”) in view of U.S. Patent No. 6,529,634 to Thyagarajan, et al. (hereinafter “Thyagarajan”) and U.S. Patent No. 5,781,241 to Donovan (hereinafter “Donovan”).

For at least the reasons stated below, Applicants assert that the combination of Kim, Thyagarajan and Donovan fails to describe or suggest the subject matter as a whole of Applicants’ claims and, therefore, that Applicants’ rejected claims 2-5, 7-10, 12-15, 17-20, 22-25, 27-31 and 33-35 are patentably distinct from the combination of Kim, Thyagarajan and Donovan.

Independent Claims 8, 18 and 28

Regarding independent claims 8, 18 and 28, the Examiner relies on Kim to teach the dividing limitation, Donovan to teach the filtering/weighting limitation and Thyagarajan to teach the selectively decimating limitation. *See Office Action, pages 6-7.* Applicants’ have amended the independent claims to provide for:

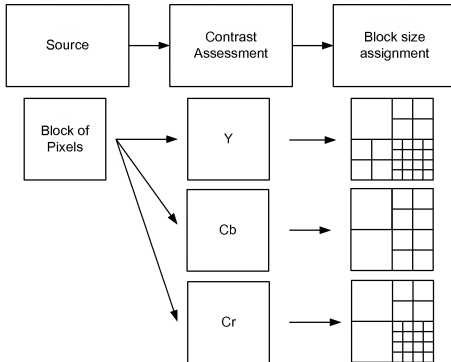
dividing the digital image into a plurality of frames, each frame including a plurality of blocks, wherein each block of the plurality of blocks may be represented as a plurality of elements within a plurality of columns (m) and rows (n);

...; and

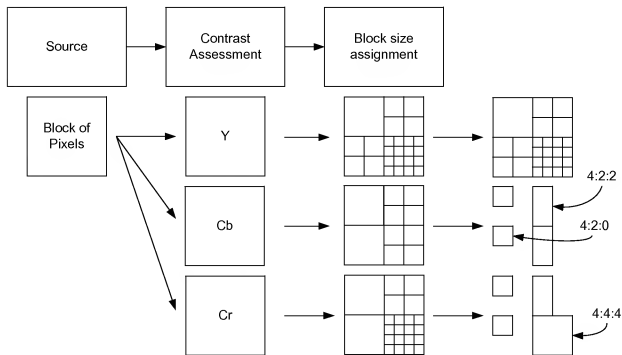
decimating a subset of the plurality of blocks within a certain frame of the plurality of frames based upon predetermined criteria.

Nowhere does the combination of Kim, Donovan and/or Thyagarajan, alone or in combination, teach or suggest the elements of the amended independent claims.

Specifically, for example, regarding the Thyagarajan reference and the decimating limitation, Applicants' amended independent claims divide a digital image into a plurality of frames, and divide each frame into a plurality of blocks. Further, Applicants' amended independent claims decimate a subset of the plurality of blocks within a certain frame of the plurality of frames based upon predetermined criteria (e.g., the predetermined criteria, for illustrative purposes only, may be the selective chrominance criteria as claimed in amended dependent claims 7, 17 and 27). This is contrary to the teachings of the Thyagarajan reference. In general, Thyagarajan teaches (*See, e.g.*, Thyagarajan, col. 5, l. 33 through col. 6, l. 41 and Figure 2) block size assignment, or block decomposition, of an entire frame. A frame may be broken down into blocks and each block into Y, Cb and Cr components and provided to the Thyagarajan encoder without sub-sampling (Thyagarajan, col. 5, ll. 19-35). Then, a contrast assessment using variance is performed on all blocks (and sub-blocks) to see whether there is high contrast of the blocks (or sub-blocks) necessitating further decomposition of the blocks (or sub-blocks). Thus the process of Thyagarajan is, *inter alia*, a block size assignment (BSA) process. The following illustration depicts the BSA process of Thyagarajan:



In contrast, Applicants' amended independent claims are generally a post-BSA process and involve a subset of the plurality of blocks within a certain frame. As these claims state, the step of dividing the digital image results in a plurality of blocks for each of a plurality of frames and then the step of decimating a subset of the plurality of blocks within a certain frame of the plurality of frames occurs and is based upon predetermined criteria. The following illustration depicts Applicants' post-BSA process (using the chromaticity decimation as claimed in dependent claims 7, 17 and 27 as an exemplary illustration only):



Note in the above illustration that chromaticity of the blocks is changed based on, and thus subsequent to, the block size assignment (not a substitute for it), which could have been previously performed by a BSA method such as that shown in Thyagarajan. Changing chromaticity (e.g., between 4:4:4, 4:2:2 and 4:2:0) on a block (or sub-block) basis after BSA can result in fewer samples of chrominance per block (or sub-block) based on a given block size assignment. These aspects of Applicants' amended independent claims 8, 18 and 28 are described, for example (and in addition to others), in Applicants' specification at paragraphs [0007]-[0008] and [0053]-[0056].

Next, Donovan generally relates to the conversion of computer video signals to

horizontally and vertically scaled television signals. *Column 1, lines 7-10*. For example, before a television could display an incoming computer video image having 480 active video lines, a converter would need to scale such incoming image so as to generate an output image having 400 active video lines. *Column 3, lines 50-54*. Such output image to be displayed by the television obviously has a fewer number of active video lines than the incoming computer video image has. This redistribution of the image across a different number of lines introduces artifacts that were not present in the original image. *Column 3, lines 58-60*. Such artifacts are reduced by modifying the filter used for reducing flicker. *Column 3, lines 61-63*. To do so, filter coefficients are modified on **a line by line basis**. *Column 3, lines 61-63*. For each television line being generated, the surrounding VGA lines are weighted in relation to their distance from the television line. *Column 3, lines 63-65*. By doing this, the location of objects and transitions in the picture do not move, which reduces distortions and artifacts in the televised image. *Column 3, lines 65-67*.

Based on the above discussion of Donovan, the Examiner's reliance on Donovan to teach or suggest Applicants' filtering limitation is not correct. More specifically, the present invention as specified in claim 8 filters each element of each column of a block of the image. *See, e.g., Application, para. 0055*. That is, Applicants' claimed filtering is accomplished on **a block by block basis**. In contrast, the filter coefficients of Donovan are being used on a line by line basis.

Therefore, for at least the reasons presented above, Applicants' respectfully submit that amended independent claims 8, 18 and 28 are allowable over the art of record.

Dependent Claims 7, 17 and 27

As previously mentioned, above, amended dependent claims 8, 18 and 28 present specific subject matter relating to selectively decimating chromaticity of a subset of the plurality of blocks within a certain frame. For at least the reasons presented above, Applicants respectfully submit that amended independent claims 8, 18 and 28 are allowable over the art of record.

Dependent Claims 2-5, 9, 10, 12-15, 19, 20, 22-25, 29 and 30

Dependent claims 2-5, 9, 10, 12-15, 19, 20, 22-25, 29 and 30 ultimately depend from amended independent claims 8, 18 and 28. The allowability of dependent claims 2-17, 19-31 and 43-48 thus follows from the allowability of amended independent claims 1, 18 and 42,

respectively. Therefore, for at least these reasons, dependent claims 2-17, 19-31 and 43-48 are allowable over the art of record.

Claims 31 and 33-35

Regarding claims 31 and 33-35, Applicants have cancelled these claims without prejudice and expressly reserving the right to file one or more continuing applications directed to the cancelled (and other disclosed) subject matter, thus rendering the Examiner's rejections moot. Applicants respectfully request withdrawal of the rejections of these claims.

CONCLUSION

All objections and rejections having been addressed, it is respectfully submitted that this application is in condition of allowance and a Notice to that effect is earnestly solicited. If any points remain in issue that the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

CHARGE STATEMENT

Please charge any fees or refund any overpayments that may be due with this response to Deposit Account No. 17-0026.

Respectfully submitted,

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